

**WHAT WE CLAIM IS:**

1. A steering control system for a vehicle including a steering wheel shaft transmitted with an operation angle of a steering wheel, a vehicle wheel steering shaft  
 5 mechanically disconnected from the steering wheel shaft, and an actuator for rotating the vehicle wheel steering shaft at a vehicle wheel steering angle depending on the operation angle of the steering wheel and a vehicle driving condition, the steering control system comprising:
  - a steering wheel shaft angle detecting means for detecting a steering wheel shaft  
 10 angle position;
  - a vehicle wheel steering shaft angle detecting means for detecting a vehicle wheel steering shaft angle position;
  - a vehicle condition detecting means for detecting the vehicle driving condition;
  - and
  - 15 a drive controlling means for determining a target angle position of the vehicle wheel steering shaft based upon the steering wheel shaft angle position and the vehicle driving condition and for controlling the operation of the actuator so as to approximate the vehicle wheel steering shaft angle position to the target angle position,
  - the drive controlling means comprising:
    - 20 a final angle position memorizing means for memorizing a final angle position representing the vehicle wheel steering shaft angle position at a time of termination of the vehicle driving operation, the final angle position memorizing means capable of maintaining the memory content even when the vehicle is stationary;
    - an input complete data memorizing means capable of switching the  
 25 memory content between a first memory condition and a second memory condition, the first memory condition indicating completeness of writing of the final angle position in the final angle position memorizing means, and the second memory condition indicating failure in writing the final angle position therein, the input complete data memorizing means capable of maintaining the memory content even when the vehicle is stationary;
    - 30 an input complete data memory controlling means for setting the memory content memorized in the input complete data memorizing means at the first memory condition in response to the completeness of writing of the final angle position in the final angle position memorizing means; and
    - an initial angle position set controlling means for allowing to employ  
 35 the final angle position memorized in the final angle position memorizing means as an initial angle position of the vehicle wheel steering shaft when the memory content in the

input complete data memorizing means is at the first memory condition at a time of restart of the vehicle driving operation after temporal termination of the vehicle driving operation and for prohibiting to employ the final angle position as the initial angle position when the memory content in the input complete data memorizing means is at  
 5 the second memory condition at the time of restart of the vehicle driving operation after the temporal termination of the vehicle driving operation.

2. A steering control system for a vehicle according to claim 1, wherein the input complete data memory controlling means sets the input complete data memorizing means at the second memory condition at a time of commencement of the vehicle  
 10 driving operation and updates the memory content in the input complete data memorizing means so as to set the input complete data memorizing means at the first memory condition when the final angle position is written into the final angle position memorizing means at the time of the termination of the vehicle driving operation, and  
 15 the input complete data memory controlling means does not update the memory content in the input complete data memorizing means when the final angle position fails to be written in the final angle position memorizing means.

3. A steering control system for a vehicle according to claim 1, further comprising:  
 20 a CPU and a RAM as a work area of the CPU included in the drive controlling means; and  
 a vehicle wheel steering shaft angle position memorizing means for memorizing a detected value of the vehicle wheel steering shaft angle position during the vehicle driving operation as needed, the vehicle wheel steering shaft angle position memorizing  
 25 means included in the RAM,  
 wherein the CPU and the RAM are designed such that supply of electric power from a vehicle battery to the CPU and the RAM is interrupted in response to the termination of the vehicle driving operation.

30 4. A steering control system for a vehicle according to claim 2, further comprising:  
 a CPU and a RAM as a work area of the CPU included in the drive controlling means; and  
 a vehicle wheel steering shaft angle position memorizing means for memorizing a detected value of the vehicle wheel steering shaft angle position during the vehicle  
 35 driving operation as needed, the vehicle wheel steering shaft angle position memorizing means included in the RAM,

wherein the CPU and the RAM are designed such that supply of electric power from a vehicle battery to the CPU and the RAM is interrupted in response to the termination of the vehicle driving operation.

5     5.     A steering control system for a vehicle according to claim 3, wherein each of the  
final angle position memorizing means and the input complete data memorizing means  
is configured with a PROM, the CPU can only read out the data in the PROM at a first  
operating voltage at which the CPU reads out and writes the data relative to the RAM,  
and the CPU can write the data in the PROM at a second operating voltage which is  
10     different from the first operating voltage.

6.     A steering control system for a vehicle according to claim 4, wherein each of  
the final angle position memorizing means and the input complete data memorizing  
means is configured with a PROM, the CPU can read out the data in the PROM at a first  
15     operating voltage at which the CPU reads out and writes the data relative to the RAM,  
and the CPU can write the data in the PROM at a second operating voltage which is  
different from the first operating voltage.

7.     A steering control system for a vehicle according to claim 5 further comprising:  
20     a power switch disposed in a power supply passage for supplying the electric  
current to the drive controlling means from the battery as an electric power source of the  
vehicle and capable of switching a connection between the battery and the drive  
controlling means to be established or interrupted in response to operation of a vehicle  
driving switch for performing or terminating the vehicle driving operation; and  
25     a backup power source for extending a time span for supplying electric current  
to the drive controlling means and for maintaining the supply of the electric current to  
the drive controlling means for a predetermined time span so as to update the memory  
content in the final angle position memorizing means and the input complete data  
memorizing means even after the supply of the electric current from the battery to the  
30     drive controlling means is interrupted in accordance with the cut off of the power  
supply passage by the power switch in response to the off operation of the vehicle  
driving switch for terminating the vehicle driving operation.

8.     A steering control system for a vehicle according to claim 6 further comprising:  
35     a power switch disposed in a power supply passage for supplying the electric  
current to the drive controlling means from the battery as an electric power source of the

vehicle and capable of switching a connection between the battery and the drive controlling means to be established or interrupted in response to operation of a vehicle driving switch for performing or terminating the vehicle driving operation; and

- 5 a backup power source for extending a time span for supplying electric current to the drive controlling means and for maintaining the supply of the electric current to the drive controlling means for a predetermined time span so as to update the memory content in the final angle position memorizing means and the input complete data memorizing means even after the supply of the electric current from the battery to the drive controlling means is interrupted in accordance with the cut off of the power supply passage by the power switch in response to the off operation of the vehicle driving switch for terminating the vehicle driving operation.

9. A steering control system for a vehicle according to claim 7, wherein the backup power source possesses a storage means capable of maintaining a voltage to be supplied to the control driving means to be substantially equal to or greater than an operating voltage of the control driving means for a predetermined time span in response to the cutoff of the power supply passage by the power switch.

10. A steering control system for a vehicle according to claim 8, wherein the backup power source possesses a storage means capable of maintaining a voltage to be supplied to the control driving means to be substantially equal to or greater than an operating voltage of the control driving means for a predetermined time span in response to the cutoff of the power supply passage by the power switch.

11. A steering control system for a vehicle according to claim 9, wherein the CPU is applied with a power voltage from the battery via a stabilized power supply circuit and the storage means is arranged to be parallel to the power supply passage between the battery and the stabilized power supply circuit.

12. A steering control system for a vehicle according to claim 10, wherein the CPU is applied with a power voltage from the battery via a stabilized power supply circuit and the storage means is arranged to be parallel to the power supply passage between the battery and the stabilized power supply circuit.

13. A steering control system for a vehicle according to claim 7, wherein the drive controlling means further comprising:

a main CPU for controlling the operation of the actuator for the vehicle wheel steering shaft, the operation of the actuator for the vehicle wheel steering shaft performed mainly by the main CPU; and

5 a sub CPU for performing at least detection of the vehicle wheel steering shaft angle position among processes performed by the main CPU in parallel with the main CPU; and

a RAM for the sub CPU as a work memory of the sub CPU,  
wherein the sub CPU is supplied with the electric current by the backup power source for the predetermined time span, and a value representing the final angle position of the  
10 vehicle wheel steering shaft being stored in the RAM for the sub CPU is memorized in the final angle position memorizing means as the final angle position when the sub CPU detects a malfunction of the main CPU while the predetermined time span.

14. A steering control system for a vehicle according to claim 8, wherein the drive  
15 controlling means further comprising:

a main CPU for controlling the operation of the actuator for the vehicle wheel steering shaft, the operation of the actuator for the vehicle wheel steering shaft performed mainly by the main CPU; and

20 a sub CPU for performing at least detection of the vehicle wheel steering shaft angle position among processes performed by the main CPU in parallel with the main CPU; and

a RAM for the sub CPU as a work memory of the sub CPU,  
wherein the sub CPU is supplied with the electric current by the backup power source for the predetermined time span, and a value representing the final angle position of the  
25 vehicle wheel steering shaft being stored in the RAM for the sub CPU is memorized in the final angle position memorizing means as the final angle position when the sub CPU detects a malfunction of the main CPU while the predetermined time span.

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